

56. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 88 in which the roll set is provided with two or more circumferentially spaced sheet-processing tools.

57. (Previously Added) Apparatus as claimed in Claim 56 in which the roll set is provided with a traction section trailing one of the tools for imparting feed motion to the sheet material subsequent to disengagement between said one tool and the sheet.

58. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 103 in which the second drive is a variable speed drive operable to vary the speed profile of sheet material feed through the nip zone.

59. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 83 including means for braking or damping freewheeling of said drive transmitting ~~means~~ arrangement so that freewheeling is arrested substantially immediately upon disengagement of the sheet from the drive transmitting means.

b 60. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 83 in which the drive transmitting ~~means~~ arrangement comprises rollers which engage the sheet material.

61. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 83 in which the drive transmitting ~~means~~ arrangement includes one or more endless conveyor belts which engage the sheet material.

62. (Canceled)

63. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 103 in which, during roll driven sheet material feed, the second drive is arrested or operates at a reduced drive speed compared with the roll drive speed.

64. (Currently Amended) Apparatus as claimed in Claim ~~52~~ 103 in which, immediately prior to transfer of sheet material feed from the second drive to the roll set or *vice versa*, the second drive is programmed to run at a speed which is reduced compared with the roll speed.

65. (Currently Amended) Apparatus as claimed in Claim ~~8-~~ 103 in which, during the interval leading up to transfer of sheet material feed from the second drive to the roll set or *vice versa*, the

second drive operates in a mode in which its speed exceeds the roll speed and is then adjusted to a lower speed.

66. (Previously Added) Apparatus as claimed in Claim 65 in which said lower speed is less than the roll speed.

67. (Currently Amended) Apparatus as claimed in Claim 52_103 in which the co-ordinating means is programmable in dependence upon the configuration of tool operations to be performed on the sheet.

68. (Currently Amended) Apparatus as claimed in Claim 52_103 in which the sheet material is fed to the roll set as discrete blanks.

69. (Currently Amended) Apparatus as claimed in Claim 52_103 in which the sheet material is fed to the roll set as a continuous web of material.

70. (Currently Amended) Apparatus as claimed in Claim 52_83 in which the ~~second drive comprises a feed table having a gate and upon which the sheets may be stacked against the gate which allows only the lowermost sheet to pass therebeneath,~~ drive transmitting arrangement driven by the servo-motor comprises a bed of rollers within the surface of the table which may be rotatably driven to advance the lowermost sheet beneath the gate to the take-up mechanism; means to allow the rollers to free wheel once the lowermost sheet is being advanced thereover by said take-up mechanism and in which means is provided for restraining freewheeling roller feed of the next lowermost sheet after the sheet being fed has passed under the gate.

71. (Currently Amended) Apparatus as claimed in Claim 52_83 in which the ~~second drive comprises a feed table having a gate and upon which the sheets may be stacked against the gate which allows only the lowermost sheet to pass therebeneath,~~ drive transmitting arrangement driven by the servo-motor comprises a bed of rollers within the surface of the table which may be rotatably driven to advance the lowermost sheet beneath the gate to the take-up mechanism; means to allow the rollers to free wheel once the lowermost sheet is being advanced thereover by said take-up mechanism; and in which means is provided for restraining freewheeling roller feed of the next lowermost sheet after the sheet being fed has cleared the rollers.

72. (Currently Amended) Apparatus as claimed in Claim 52_83 in which the ~~second drive comprises a feed surface having a gate and upon which the sheets may be stacked against the~~

~~gate which allows only the lowermost sheet to pass therebeneath, drive transmitting arrangement driven by the servo motor comprises conveyor means associated with the feed surface for advancing the lowermost sheet beneath the gate to the take-up mechanism ~~means to allow the conveyor means to free wheel once the lowermost sheet is being advanced thereover by said take-up mechanism,~~ and in which means is provided for restraining freewheeling feed of the next lowermost sheet after the sheet being fed has cleared the conveyor means.~~

73. (Previously Added) Apparatus as claimed in Claim 72 in which the conveyor means comprises roller means which directly engage with the lowermost sheet.

74. (Previously Added) Apparatus as claimed in Claim 72 in which the conveyor means comprises roller means which contact the lowermost sheet indirectly through one or more conveyor belts entrained around the roller means.

75. (Previously Added) Apparatus as claimed in Claim 70 in which the restraining means comprises brake means acting on the rollers or conveyor means.

76. (Previously Added) Apparatus as claimed in Claim 70 in which the restraining means comprises vacuum suction means located upstream of the rollers or conveyor means to hold the next lowermost sheet against the action of the freewheeling rollers after the sheet being fed has passed under the gate.

77. (Previously Added) Apparatus according to Claim 70 in which the take-up mechanism comprises a tool-carrying roll set.

78. (Previously Added) Apparatus according to Claim 70 in which the rollers or conveyor means are fitted with sprag clutches and advance the sheet being fed at substantially the same speed as, or a slower speed than that of, the take-up mechanism.

79. (Previously Added) Apparatus according to Claim 70 in which the rollers or conveyor means are driven by a servo electric motor which alternately drives the rollers or conveyor means forwardly and stops, the timing of the motor being controlled by the processing machinery.

80. (Previously Added) Apparatus according to Claim 70 wherein vacuum suction is applied from beneath the rollers or conveyor means to pull the lowermost sheet downwardly against the rollers.

81. (Previously Added) Apparatus according to Claim 70 wherein the rollers are rotatably interconnected by timing drive belt means, one of which rollers is driven by a further timing drive belt.

82 (Previously Added) Apparatus according to Claim 81 wherein said further drive belt is toothed.

83. (Currently Amended) Apparatus for feeding sheet material sequentially on demand to take-up mechanism of sheet processing machinery, said apparatus comprising a feed table having a gate and upon which sheets may be stacked against the gate which allows only the lowermost sheet to pass therebeneath, a drive transmitting means arrangement driven by a servo-motor to advance the lowermost sheet beneath the gate to the take-up mechanism, a sensing means between the gate and the take-up mechanism to detect the passage of a datum position of the sheet, and a microprocessor which receives data indicating the position of the take-up mechanism and from the sensing means and which is programmed to control the servo-motor to ensure that the sheet presents itself to the take-up mechanism at the correct instant, the arrangement being such that, when the take-up mechanism commences to feed the sheet, the drive transmitting means operates automatically in a freewheel mode while in engagement with the sheet, the arrangement being such that, when the take-up mechanism commences to feed the sheet, the drive transmitting arrangement operates automatically in a freewheel mode while in engagement with the sheet .

84. (Canceled)

85. (Previously Added) Apparatus according to claim 83 wherein the microprocessor is programmed to ensure that the leading edge of the sheet presents itself to the take-up mechanism at a desired speed.

86. (Previously Added) Apparatus according to claim 85 wherein the desired speed is slightly less than the speed at which the take-up mechanism forwards the sheet.

87. (Previously Added) Apparatus according to claim 85 wherein the desired speed is zero.

88. (Previously Added) Apparatus according to Claim 83 wherein the take-up mechanism comprises a pair of take-up rolls.

89. (Previously Added) Apparatus according to Claim 83 wherein the take-up mechanism comprises gripper bars.

90. (Currently Amended) Apparatus according to Claim 83 wherein the means drive transmitting arrangement driven by ~~the second drive or~~ the servo-motor comprises a bed of rollers within the surface of the table which are rotatably driven to advance the lowermost sheet beneath the gate to the take-up mechanism when forward drive to the rollers is arrested and means to allow the rollers to free-wheel once the lowermost sheet is being advanced thereover by the take-up mechanism.

Claims 91-102 (Canceled)

103. (New) Apparatus according to claim 88 in which said rolls are provided with one or more sets of sheet-processing tooling for engagement with, and for imparting drive to, the sheet material in the nip zone between the roll set and further comprising a first drive for rotating the roll set so that the sheet material is driven through the nip while engaged by at least one of the sets of tooling, a second drive including said servomotor upstream of the nip zone for effecting feed of the sheet material, and means operable to co-ordinate operation of the second drive with rotation of the roll set in such a way that sheet feed through and beyond the nip zone is effected in part by the roll set and in part by the second drive.

REMARKS

Applicant is amending the claims as set forth above to better define the invention and to address the restriction requirement. As amended, the only independent claim is claim 83.

Applicant elects Species C, the embodiment shown in Figure 4. All of the existing claims are readable on Species C.